AMENDMENT

In The Specification

Please replace the paragraph beginning at page 6, line 21, with the following rewritten paragraph:

"SPEEDBOARD," which is manufactured and distributed by Gore, is an example of a low loss, fluorinated polycarbon (*e.g.*, "TEFLON") laminate. Figure 1 shows a plot of the bandwidth per channel for a 0.75m "SPEEDBOARD" backplane as a function of data channel pitch. As the data channel pitch, p, decreases, the channel bandwidth also decreases due to increasing conductor losses relative to the dielectric losses. For a highly parallel (*i.e.*, small data channel pitch) backplane, it is desirable that the density of the parallel channels increase faster than the corresponding drop in channel bandwidth. Consequently, the bandwidth density per channel layer, BW/p, is of primary concern. It is also desirable that the total system bandwidth increase as the density of the parallel channels increases. Figure 2 shows a plot of bandwidth density vs. data channel pitch for a 0.75m "SPEEDBOARD" backplane. It can be seen from Figure 2, however, that the bandwidth-density reaches a maximum at a channel pitch of approximately 1.2 mm. Any change in channel pitch beyond this maximum results in a decrease in bandwidth density and, consequently, a decrease in system performance. The maximum in bandwidth density occurs when the conductor and dielectric losses are approximately equal.--

Please replace the paragraph beginning at page 7, line 10, with the following rewritten paragraph:

--The backplane connector performance can be characterized in terms of the bandwidth vs. bandwidth-density plane, or "phase plane" representation. Plots of bandwidth vs. bandwidth density/layer for a 0.5m glass reinforced epoxy resin (*e.g.*, "FR-4") backplane, and for 1.0m and 0.75m "SPEEDBOARD" backplanes are shown in Figure 3, where channel pitch is the independent variable. It is evident that, for a given bandwidth density, there are two possible solutions for channel bandwidth, *i.e.*, a dense low bandwidth "parallel" solution, and a high bandwidth "serial" solution. The limits on bandwidth-density for even high performance PCBs should be clear to those of skill in the art.--

Please replace the paragraphs beginning at page 11, line 6, and page 11, line 15, with the following rewritten paragraphs:

-- Figures 10-12 also demonstrate the improvement that the present invention can have over conventional systems. Figure 10 provides a graph of attenuation versus frequency for a typical prior art waveguide. As the frequency of the wave propagating through the waveguide increases from about 40 Ghz, the attenuation remains relatively constant at -5 dB, more or less, until the frequency reaches about 80-85 Ghz. At that point, the attenuation increases dramatically to about -30 dB. This sudden increase in attenuation occurs because, at about 80-85 Ghz, the mode of the wave changes. As frequency continues to increase beyond the 80-85 Ghz range (*i.e.*, after the mode changes), the attenuation of the wave returns to normal. Thus, in a prior art waveguide system, a dramatic increase in attenuation of the wave can be observed at the point where the mode changes.

Figures 11 and 12 provide graphs of attenuation versus frequency for a typical backplane system according to the invention wherein the waveguide has a gap such as

described above for preventing propagation of a lower order mode into a higher order mode. The graph of Figure 11 represents propagation of the wave in a first direction through the waveguide. The graph of Figure 12 represents propagation of the wave in the opposite direction through the waveguide. As shown in both Figures 11 and 12, the attenuation of the wave is relatively constant, at about 0dB, in the range of frequencies from about 6 Ghz to about 20 Ghz. Thus, Figures 10-12 demonstrate that the waveguides of the present invention provide greater relative bandwidth than conventional systems.--

Please replace the paragraphs beginning at page 12, line 2, and page 12, line 12, with the following rewritten paragraphs:

-- Waveguide 20 can support both an even and an odd longitudinal magnetic mode (relative to the symmetry of the magnetic field in the direction of propagation). The even mode has a cutoff frequency, while the odd mode does not. The field patterns in waveguide 20 for the desired odd mode are shown in Figure 13B. The fields in dielectric channel 22 (*i.e.*, the region between -a/2 and a/2 as shown in Figure 13B and designated "dielectric") are similar to those of the TE 1,0 mode in rectangular waveguide 10 described above, and vary as Ey ~ cos(kx) and Hz ~ sin(kx). Outside of dielectric channel 22, however, in the regions designated "air," the fields decay exponentially with x, *i.e.*, $\exp(-\tau x)$, because of the reactive loading of the air spaces on the left and right faces 22L, 22R (see Figure 13A) of dielectric channel 22.

The dispersion characteristic of this mode for a "TEFLON" guide is shown in Figure 14, where Beta and F are the normalized propagation constant and normalized frequency, respectively. That is,